

CLAIMS

1. An additive for hydraulic compositions comprising a phosphoric monoester having a group represented by general formula (1) below or a salt thereof (referred to hereinafter as the monoester) and a phosphoric diester (including a pyrophosphoric diester) having a group represented by the general formula (1) below or a salt thereof (referred to hereinafter as the diester):



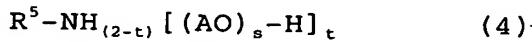
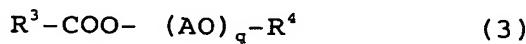
wherein R^1 represents a C8 to C22 alkyl or alkenyl group or a hydrocarbon group having two or more benzene rings, AO represents a C2 to C4 oxyalkylene group, and n is a number of 1 to 50 as the average added mole number,

wherein the monoester weight content ranges from 0.4 to 0.95 in terms of monoester/(monoester + diester).

2. The additive for hydraulic compositions according to claim 1, which further comprises at least one compound selected from the group consisting of (B1) a nonionic compound having a C8 to C26 alkyl or alkenyl group or a C6 to C35 hydrocarbon group having one or more benzene rings and a polyoxyalkylene group comprising a C2 to C4 oxyalkylene group wherein the average added mole number is 3 to 400 and (B2) an ionic compound having a C8 to C26 alkyl or alkenyl group or a C6 to C35 hydrocarbon group having one or more benzene rings and a polyoxyalkylene group comprising a C2 to C4 oxyalkylene group wherein the average added mole number is 5 to 400, the ionic compound (B2) excluding the phosphate having the group

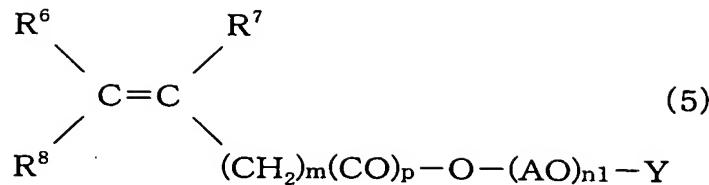
represented by the general formula (1) in claim 1 or a salt thereof.

3. The additive for hydraulic compositions according to claim 2, wherein the nonionic compound is at least one compound selected from the group consisting of a compound represented by the general formula (2), a compound represented by the general formula (3) and a compound represented by the general formula (4) :



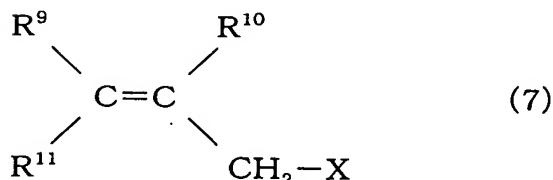
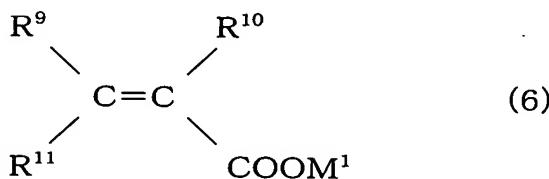
wherein R^2 , R^3 and R^5 each represent a C8 to C26 alkyl or alkenyl group or a C6 to C35 hydrocarbon group having one or more benzene rings, R and R^4 each represent a hydrogen atom, a C1 to C26 alkyl or alkenyl group or a C6 to C35 hydrocarbon group having one or more benzene rings, AO represents a C2 to C4 oxyalkylene group, p , q and s each represent an average number of molecules added, which is a number of 3 to 400, and t is 1 or 2.

4. The additive for hydraulic compositions according to any one of claims 1 to 3, which further comprises a copolymer having at least one structural unit selected from a structural unit derived from a monomer represented by general formula (5) :



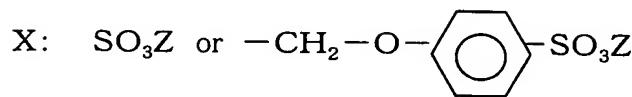
wherein R^6 and R^7 each represent a hydrogen atom or methyl group, m is a number of 0 to 2, R^8 represents a hydrogen atom or $-\text{COO}(\text{AO})_{n1}\text{Y}$, p is a number of 0 or 1, AO represents a C2 to C4 oxyalkylene group or an oxystyrene group, $n1$ is a number of 1 to 300 that is the average added mole number, and Y represents a hydrogen atom or a C1 to C18 alkyl or alkenyl group,

a structural unit derived from a monomer represented by general formula (6) and a structural unit derived from a monomer represented by general formula (7):



wherein R^9 to R^{11} each represent a hydrogen atom, methyl group or $-(\text{CH}_2)_{m1}\text{COOM}^2$, which may form an anhydride together with $-\text{COOM}^1$ or another $-(\text{CH}_2)_{m1}\text{COOM}^2$, where M^1 and M^2 are not present, M^1 and M^2 each represent a hydrogen atom, an alkali metal, an alkaline

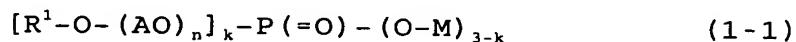
earth metal, an ammonium group, an alkyl ammonium group or a hydroxyl-substituted alkyl ammonium group, and m1 is a number of 0 to 2,



wherein Z represents a hydrogen atom, an alkali metal, an alkaline earth metal, an ammonium group, an alkyl ammonium group or a hydroxyl-substituted alkyl ammonium group.

5. The additive for hydraulic compositions according to any one of claims 1 to 4, which further comprises an antifoaming agent.

6. The additive for hydraulic compositions according to any one of claims 1 to 5, in which each of the monoester and the diester comprises a compound represented by the formula (1-1):



wherein R^1 represents a C8 to C22 alkyl or alkenyl group or a hydrocarbon group having two or more benzene rings, AO represents a C2 to C4 oxyalkylene group, n is an average added mole number of 1 to 50, k is 1 or 2, and M represents a hydrogen atom, an alkali metal, an alkaline earth metal, an ammonium group, an alkyl ammonium group or a hydroxyl-substituted alkyl

ammonium group.

7. A hydraulic composition comprising the additive for hydraulic compositions described in any one of claims 1 to 6, hydraulic powder and water.

8. The hydraulic composition according to claim 7, which comprises the monoester and the diester in the total amount of 0.01 to 7.5 parts by weight based on 100 parts by weight of the hydraulic powder.

9. A set product obtained from the hydraulic composition described in claim 7 or 8.

10. Use of the additive described in any one of claims 1 to 6 for an additive to a hydraulic composition.

11. A method of dispersing a hydraulic composition by adding the additive described in any one of claims 1 to 6 to a hydraulic composition.